3 Gt. Brit. Colonial Office G-3 (1938) 1940 MMI Aden MMI

743 758 A small Lunatic Asylum is situated outside the walls of the Civil Hospital and is administered from it.

[744] The Port Health work is a very important feature in the medical and sanitary organisation of the Colony. The proximity of Aden by sea to ports which are subject to periodic infections makes the careful inspection of vessels a vital matter, and in addition the services of the Port Health Officer are in constant demand to assist the masters of the many cargo ships which use the port and carry no doctor. Passengers and members of the crews requiring hospital treatment are accommodated in the European General Hospital, or, if the illness is an infectious one, in suitable isolation. A few cases of chickenpox and three cases of modified smallpox were landed from shipping during 1938.

743 744 In the European General Hospital 66 residents of Aden and 155 patients from ships were treated as in-patients during the year. In all 23 different nationalities were represented.

During 1938, 2,178 Bills of Health were issued to mechanically propelled vessels and 1,609 to native craft.

V.—HOUSING

General

342 647 654 Houses in Aden are of stone masonry, except at Sheikh Othman where they are mostly built with sun-dried bricks.

The control of housing in Aden is vested in the Executive Committee of the Settlement, and plans for new buildings and reconstructions are passed by them after scrutiny by the Medical Officer of Health and the Settlement Engineer.

Particular attention is paid to efficient lighting and ventilation. Each residential building is provided with sanitary and kitchen accommodation separated from the living rooms by open court-yards or by large shafts open to the sky.

Most of the houses are provided with floors made of cement-concrete; this is insisted upon in all new buildings, and the height of the houses is never allowed to exceed the width of the streets.

Back-to-back houses are not allowed; a few still exist in the village of Maala, but these are being demolished as opportunity occurs.

[514] 369 At the rear of all houses there are open spaces from 5 ft. to 10 ft. wide. They are called sweeper passages, and the sanitary accommodation of the houses abuts on to these spaces and is drained into them. Each such passage is connected with the main drainage system in all divisions of the Settlement except Maala, where it is connected with a large soak pit.

Every building plan is carefully scrutinised by the Public Health Department before construction is allowed.

Gt. Brit., Colonial Office G-3 (1938) 1940 MMI Aden MMI

313 premises were disconnected, of which 200 were eventually reconnected. 392 365

(7) *Other Supplies.*—3,814,000 gallons of bore water were supplied free for flushing sewers and 120,000 gallons for fire fighting and practices.

(8) *Water Analysis—Chlorination.*—Three bacteriological and one chemical analyses of both the raw and the chlorinated water were carried out during the year. The bacteriological analyses all showed very satisfactory results in respect of all the samples for drinking water. 364

The chemical analysis showed that the water was very similar chemically to that tested in 1935 and 1937. It is noteworthy that the sodium chloride (salt) content has not increased.

The whole of the water supply to the Fortress was automatically chlorinated at Isthmus, the dose being ¼ part per million by weight. The water at Sheikh Othman was also safeguarded by placing ¼ lb. of bleaching powder in each tank every morning.

VI.—PRODUCTION

Veterinary

Condition of Live Stock and Meat.—The condition of the live stock from the hinterland was not up to the usual standard, due to cattle being brought in from famine stricken areas. The condition of the live stock from British Somaliland, particularly sheep and goats, was very good. The quality of mutton was 1st class and beef 2nd class. 231 439

Imports from British Somaliland and Djibouti :—72,180 sheep and goats, 137 oxen, 5 cows, 6 ponies, 2 mules.

Imports from Arabian and Red Sea Ports :—1,529 sheep and goats, 3 milk cows, 13 horned cattle, 12 calves, 3 gazelles.

Imports from the hinterland :—1,229 horned cattle, 617 large calves, 373 milk cows, 8,093 goats, kids and sheep, 34 camels, 13 donkeys, 1 pony.

Export from Aden :—3,748 sheep and goats, 20 horned cattle, 16 large calves, 32 camels, 1 donkey, 19 monkeys.

Bovine Contagious Disease.—Rinderpest accounted for 224 deaths among milk cattle and calves of Crater and Tawahi. 232

Preventive Measures.—The epidemic was controlled by the following precautionary measures being taken :—

1. All infected animals were segregated.
2. Stables were regularly disinfected.
3. Cattle were inoculated with anti-Rinderpest serum.
4. Carcasses were incinerated and the movement of horned cattle was controlled.

4:Gt. Brit. . Colonial Office G-3 (1937) 1939 MMI Aden MMI

164 743 mumps occur from time to time and are treated in the infectious diseases hospital on Maala plain.

748 A small lunatic asylum is situated outside the walls of the Civil Hospital and is administered from it.

The port health work is a very important feature in the medical and sanitary organization of the Colony. The proximity of Aden by sea to ports which are subject to periodic infections makes the careful inspection of vessels a vital matter, and in addition the services of the Port Health Officer are in constant demand to assist the masters of the many cargo ships carrying no doctor which use the port. Passengers and members of the crew requiring hospital treatment are accommodated in the European General Hospital or, if the illness is an infectious one, in suitable isolation. It is usual to have patients of four or five different nationalities, European and Eastern, in the wards at the same time, which is a compliment to the hospital and indicative of the service it renders to shipping, but tests very thoroughly the linguistic capabilities of the staff.

During 1937 2,274 bills of health were issued to mechanically-propelled vessels and 1,222 to native craft.

V.—HOUSING.

General.

342 Houses in Aden are of stone masonry, except at Sheikh Othman where mostly they are built with sun-dried bricks.

In every case particular attention is paid to efficient lighting and ventilation. Each residential quarter is provided with proper sanitary accommodation and kitchen which are suitably detached from the living-rooms by large and open court-yards or by large shafts open to the sky.

[361] Most of the houses are provided with floors made of cement-concrete; this is insisted upon in all new proposals, and the height of the houses is never allowed to exceed the width of the streets.

Back-to-back houses are not allowed; a few still exist in the village of Maala, but these are being eradicated as opportunity occurs.

364 At the rear of all houses there are open spaces from 5 ft. to 10 ft. wide. They are called sweeper passages, and the sanitary accommodations abut on to these spaces and drain into them. Each such passage is connected with the main drainage system in all divisions of the Settlement except Maala, where it is connected with a big soak-away pit.

With these aims every building plan is carefully scrutinized by the Public Health Department before it is allowed to be constructed.

342 Most of the dwelling-houses within the Settlement limits are well ventilated and lighted and are satisfactory from a public health point of view. Endeavours are being made to effect an improvement in the architectural standard of the buildings.

S.Gt. Brit., Colonial Office G-8 (1947) 1948 MM1 Aden MM1

	1936 Million gallons	1941 Million gallons	1947 Million gallons
Total water raised from boreholes	205	353	578
Water consumed by civil population	45	115	181
Water sold to shipping	18	65	52
Water consumed by military	25	96	120
Water used in gardens	76	52	114
Other purposes, including water unaccounted for	41	25	111

As no census was taken in Aden between 1931 and 1946, reliable figures of the average daily consumption per head of the civil population for 1936 and 1941 cannot be given. The figure based on the 1946 census is 99 gallons per head per day.

The water is pumped direct from the boreholes into reservoirs, and gravitates through a 15-inch diameter pipeline 7 miles in length into the Isthmus, where it is pumped into service reservoirs, and distributed to the various parts of the Colony by gravitational mains, of which there are over 26 miles of 2½-inches diameter and above. The total capacity of the reservoirs in the Colony is 2,850,000 gallons.

All supplies are metered, and at the end of 1947 over 4,400 domestic water meters were in use. Four hundred and one new connections were given in 1946.

The cost of water to the general public is 4 annas less 10 per cent. per 100 gallons (approximately 3*s.* 3*d.* per thousand gallons). The revenue derived from the sale of water during 1947 was Rs. 6,84,230 (£51,318) and the total expenditure Rs. 5,98,970 (£44,923).

Seven per cent. of the total water used by the general public is supplied free of charge from 26 standposts erected in various parts of the Colony.

Although the water at source is of a very high standard of purity bacteriologically, it is automatically chlorinated to combat any possible pollution through dust or any other agency.

SEWAGE DISPOSAL

The water-works department is also responsible for the construction and maintenance of all sewers in the Colony. All sewage discharges into the sea through five separate sea outfalls taken to just below low-water mark. Except at Sheikh Othman, where small primary settling tanks have been constructed there are no sewage disposal works.

In order to minimise the fouling of the harbour and beaches all water-closets are required to discharge into the sewers through a septic tank, where all solid matter is first liquefied.

Government have approached an eminent London firm of consulting engineers, with a view to the preparation of a complete sewerage scheme for the Colony.

The cleansing of sewers is carried out by the Public Health Department.

G.Gt. Brit., Colonial Office G-3 (1948) 1950 MMI Aden M.M.]

368 365 312 *Fire Standposts and other Free Supplies.* During 1948, 124,274,000 gallons of water representing 21·2 per cent of the total water raised was issued free of charge for fire-fighting, gardens, free standposts, Public Works etc. 13,565,000 gallons of water were issued free of charge to the general public from the 32 free standposts now erected in the various points of the Colony.

*364 365 312 *Sterilisation of Water.* The whole of the water (except that supplied to Sheikh Othman gardens) is chlorinated before distribution, and the many bacteriological analyses made during the year proved that the water was eminently fit for domestic consumption.

Drainage Works. This covers the maintenance of the whole of the sewerage system in the Colony, with the exception of cleansing which is carried out by the Public Health Department.

652 *New Work.* The expenditure on new works during 1948 was Rs. 265,517. The principal items being shown below:

	Rs.
1. New house connection and minor extension to water mains	57,351
2. Minor drainage works	8,435
3. Sinking new boreholes at Sheikh Othman	74,000
4. New distribution mains	51,195
5. Store room at Isthmus Pump House	2,770
6. Quarter for pump cleaner	3,251
7. Extension of Maalla drainage	12,000
8. Two flushing tanks	3,576
9. New 9-inch water main from Sheikh Othman to Khormaksar	13,915

Finance. The total receipts for 1948 were Rs. 709,546 and the expenditure Rs. 653,896.

The total expenditure on the water supply since its inception to 31st December, 1948, is Rs. 7,024,204 and the amount received from the sale of water during the same period is Rs. 8,349,272.

SEWAGE DISPOSAL

365 364 The Waterworks Department is also responsible for the construction and maintenance of all sewers in the Colony. All sewage discharges into the sea through five separate sea outfalls taken to just below low-water mark. Except at Sheikh Othman, where small primary settling tanks have been constructed, there are no sewage disposal works. In order to minimise the fouling of the harbour and beaches all water-closets are required to discharge into the sewers through a septic tank, where all solid matter is first liquefied.

Government have approached an eminent London firm of consulting engineers, with a view to the preparation of a complete sewerage scheme for the Colony.

The cleansing of sewers is carried out by the Public Health Department.

Water sold to shipping	18	65	69	73
Water consumed by Military ..	25	96	139	158
Water used in gardens ..	76	52	161	142
Other purposes including water unaccounted for	41	25	103	103

The water is pumped direct from the boreholes into reservoirs and gravitates through a 15 in. diameter pipeline 7 miles in length into the Isthmus, where it is pumped into service reservoirs and distributed to the various parts of the Colony by gravitational mains, of which there are over 28 miles of varying diameter from 9 in. to 2½ in. The total capacity of the reservoirs in the Colony at present is 2,965,000 gallons. A new 3-million-gallon reservoir above the Main Pass is under construction and will be completed in 1952.

All supplies are metered and at the end of 1950 over 6,330 domestic water meters were in use. Six hundred and thirty-four new connections were given in 1949, and 674 in 1950.

The cost of water to the general public is 4 annas less 10 per cent per 100 gallons (approximately 3s. 3d. per thousand gallons). The revenue derived from the sale of water during 1949 and 1950 was Rs. 16,15,649 (£121,173) and the total expenditure was Rs. 12,21,898 (£91,642).

Six per cent of the total water used by the general public is supplied free of charge from 32 standposts erected in various parts of the Colony.

Although the water at source is of a very high standard of purity bacteriologically, to combat any possible pollution through dust or any other agency it is automatically chlorinated.

The maintenance and provision of new sewers is the responsibility of the Public Works Department, but the cleaning of sewers is carried out by the Public Health Department. All sewage discharges into the sea through five separate outfalls extending to just below low water mark. At Sheikh Othman, small primary settling tanks have been constructed, but there are no sewage disposal works.

In order to minimise fouling of the harbour and beaches, all water closets are required to discharge into the sewers through a septic tank, where all solid matter is first liquified.

ELECTRICITY SUPPLY

Electricity as a public utility was first introduced into Aden in 1926, when the power house was completed, and three 330 kva generating sets with oil-fired steam boilers and necessary auxiliary plant were erected.

The station was subsequently enlarged, and at the end of 1947, three turbo generators of 1,200 kw., 1,200 kw. and 750kw. respectively, with boilers of a steaming capacity of 47,000 lb. per hour were installed. In addition, two 250 kw. generators powered by diesel engines are available in an emergency.

The installation of the stand-by diesel generator (250 kw.) at Sheikh

G.Gt. Brit., Colonial Office G-3 (1951-52)1954 MMI Aden MMI

651 insurance and any other expenses necessary to maintain the premises in a state to command that rent. From the gross value 10 per cent is deducted in lieu of repairs, insurance, etc., and the residue is known as the rateable value.

Sanitation Tax

This tax in the Fortress is assessed at 4½ per cent per annum on the rateable value and in Sheikh Othman at 2½ per cent and is collected to compensate for the conservancy services rendered by the Public Health Department. In Aden where few sewers exist, the daily removal of sullage water and human waste from thousands of houses not connected to main drainage is a considerable task.

[349]

Qat Tax

[276] The tax on qat (a narcotic leaf chewed by the local inhabitants) is collected at the Sheikh Othman Township Office in the case of qat imported overland from the Yemen. Recently a superior quality of qat has been imported by air from Abyssinia and the tax is collected by the Customs and Excise Department near the airport. The tax is assessed at *Sh.* 5 per 20 lb. of all types of qat imported.

Vehicles

The Township Authority registers all animal and hand-drawn vehicles and a registration fee varying between *Sh.* 12 and *Sh.* 20 per annum is charged. Vehicles fitted entirely with rubber tyres are, however, registered free of charge in order to encourage the use of rubber tyres so that the wear and tear on road surfaces can be decreased. Bicycles are not registered at present.

Motor vehicles are registered by the Police, who collect the taxes and issue licences.

Trade Licences

The licensing of general trades was introduced during the war as an aid to control and the fee then was very small and is still only *Sh.* 5 per annum except for trades in tobacco and dangerous substances, which pay higher rates.

S.Gt. Brit., Colonial Office G-3 (1951-52)1954 M041 Aden MM1

658 Technical College in November, 1951, the only remaining capital project was the Intermediate School for Girls.

Health

Although a special medical officer for schools was not appointed the amount of medical and dental attention was increased. The system of school dressers and of attendance at hospital was improved. There was no epidemic during the year. The supply of school milk was extended to the full three terms instead of, as previously, two terms.

HEALTH

General

164 Although the port is astride the main sea-route between the Indian Ocean and the Mediterranean Sea it has remained conspicuously free 744 from any of the Convention diseases. Plague, cholera, smallpox, yellow fever and typhus did not occur in the Colony during 1951–52 —indeed they have not occurred as endemic diseases for a number of years. Many ships and dhows of many nationalities reach the port in transit to other parts of the world, but vigilance by the Port Health Authorities and the Public Health Department combined with growing appreciation of the value of the International Sanitary Control measures have ensured the continued absence of epidemic diseases. During the latter part of 1952 influenza was imported from Europe and elsewhere, and caused the sickness rate to rise. Fortunately this disease did not increase the mortality rate.

From an epidemiological point of view the hinterland of Aden presents greater problems than do the sea and airborne traffic except, probably, the importation of influenza which is more likely to arrive by sea and air than from the interior.

An outbreak of plague in the Yemen in 1951 was countered in Aden by dusting immigrants from the Yemen with 10 per cent D.D.T. at the Police posts on the outskirts of the Colony, and anti-rat measures were intensified.

• 349 The state of environmental hygiene and sanitation continued to be fairly satisfactory, there being a marked absence of flies and mosquitoes. Sanitation in certain areas still requires attention and this is being examined with a view to providing better housing conditions.

Maternity and Child Welfare

165 The infant mortality rate has shown a steady decline over the last 10 years. In 1951 the crude rate was 156.96 per 1,000 live births, in 1952 it was 139.92 per 1,000. As a comparison it may be mentioned that in 1943 the crude rate was 238.97 per 1,000. Increased attention has been given to the maternity and child welfare aspects of the Medical Department's work and during April, 1952, a new block of wards was in the process of being added to the existing Maternity and Child Welfare Hospital and Clinic. In order to expand the influence of maternity and child welfare work in homes four Home Visitors were engaged. These Visitors have proved invaluable; they were recruited

Gh Simmons et al G-8 (1941-1951) 1954
M1 Middle East

boreholes near Sheikh Othman. It is pumped to tanks, from which it flows through open conduits to a storage reservoir on the isthmus. The supply for the township of Aden is pumped from the reservoir to storage tanks located on the hills above Crater and the modern harbor suburb of Tawahi. It is then distributed to individual house connections and to filling stations, from which camel carts peddle water to the older sections of the town. A portion of the supply is diverted at Sheikh Othman for irrigation purposes, while the remainder is chlorinated at the isthmus reservoir before being distributed to the towns. The domestic supply is subjected to weekly bacteriologic examinations in the laboratories of the government hospital. In spite of frequent inspections, however, numerous possibilities for contamination are connected with the sale of household supplies from camel carts. In the summer months, the temperature of the water at the tap often reaches 95° to 98° F., and cooling devices are necessary. Supplementary supplies are obtained from numerous shallow wells, but in the majority the the water is brackish and unpotable. The historic Aden "tanks" or cisterns, which date from pre-Islamic times, are rarely filled and have little value as a means of water supply.

The sources of water vary in different parts of the Protectorate. While perennial streams and springs abound in sections of the southwestern highlands, in most areas the rivers and the wadies are seasonal, and flow only for brief periods after the rains. Wells are the most frequent source of supply, but, depending upon the region, water is also procured from streams, springs or rain-water cisterns. In some localities in Eastern Aden Protectorate, it is brought to the towns from distant springs or wells in underground conduits which are comparable with the qanats of Iran. The water for Mukalla is obtained from a series of wells at Bakaushar and collected in a reservoir about 4 miles from the town. It is piped to individual outlets in the palaces and the

mosques and to storage tanks from which the commercial carriers draw water for sale to the inhabitants. Most well supplies are unprotected and exposed to subsoil and surface contamination. The ablution pools in the mosques are often heavily polluted and serve as vehicles for the transmission of intestinal infections. They also provide conditions favorable for the breeding of anopheline and other mosquitoes; also of Planorbis and Bulinus snails.

There are numerous small irrigation projects in the agricultural districts, especially in Western Aden Protectorate and the Hadhramaut, many of which have been in use for decades. They depend upon water from streams or wells and, in some parts of the highlands, from spring-fed cisterns. Pumps have been introduced in the modern developments, but in most instances water is drawn from streams and wells in the traditional manner, namely, in leather buckets by means of ropes pulled over wooden pulleys by men or animals.

Waste Disposal

The methods of sewage disposal are primitive. Septic tanks, which discharge into the main drainage system, are connected with some of the newer houses in Aden Colony, but pail privies provide the usual means of sewage disposal in both Aden and Sheikh Othman townships. In old buildings with several stories, soil pipes which may be 40 feet in length lead from the privies on the upper floors to containers below. The night soil is collected regularly from private and public latrines by the town authorities and conveyed to incineration plants. Pit latrines are employed in some quarters, but they are being abolished wherever possible. In the congested districts, the latrines are located along concrete passages between the rears of the houses and are drained to storm sewers or to soakpits. The construction of a modern sewerage system for the Colony is under consideration.

The "long drop" method, in which closets

p. 244(B)

Gh Simmons et al G-8 (1941-1952) 1964
MI Middle East

his snails have been described from some of the affected foci.

Ancylostomiasis. Hookworm infection occurs in Lahej and a few agricultural centers in Western Aden Protectorate. *Necator americanus* has been identified in the cases treated at the Civil Hospital in Aden.[20]

Other Helminth Infections. Infections with one or more types of intestinal worms are prevalent, particularly among the peoples of the Protectorate. Ascariasis is widespread. Trichuriasis and, to a lesser extent, enterobiasis are common. Hydatid disease is reported among individuals from the Colony and from the interior. Infection with the beef tapeworm, *Taenia saginata*, is enzootic among the cattle in the tribal districts, and human infections are undoubtedly frequent. Cases are occasionally encountered among immigrant families in the Colony. The pork tapeworm, *T. solium*, is rare, but infections are sometimes seen in the Aden hospitals.

Other Infections. *Brucella melitensis* is enzootic among the goats in this area, and Malta fever is diagnosed from time to time in the Colony hospitals and dispensaries.

Diseases Spread Chiefly Through the Respiratory Tract

Tuberculosis. Tuberculosis is one of the most prominent diseases affecting the inhabitants of southern Arabia, but no precise information is available, except for Aden Colony. The high degree of undernutrition and overcrowding, and the low standards of personal hygiene and sanitation prevailing among large sections of the population, favor the spread of the infection. The disease is probably prevalent among the women who are confined to close quarters by the *purdah* system and among the young children in close contact with them. In a small tuberculin test survey covering 91 Aden township schoolboys of 7 to 13 years of age, in 1941,[5] positive reactions were obtained in 34 per cent—a rate which ranks high among those usually found in

M1 Middle East

Responsibility for the health of the people in the Colony resides in its Medical and Health Department, which is administered by a Director of Medical Services, with headquarters in Aden. There are no organized public health services in the Protectorate. Medical facilities are supported mainly by the British authorities in Western Aden Protectorate and by the local rulers in Eastern Aden Protectorate. As of 1950, there were 4 hospitals, with an aggregate capacity of about 600 beds, in the Colony which served the local residents and accessible portions of the Protectorate. In addition, several government, mission or private dispensaries, 2 venereal disease treatment centers and a maternity and child welfare clinic were in operation. The Protectorate facilities included 2 small hospitals, a child welfare center and 11 dispensaries in Eastern Aden Protectorate; 18 dispensaries in Western Aden Protectorate.

Water supplies are scarce throughout this region, except in portions of the western highlands. The water supply for the Colony is derived from boreholes and treated by chlorination. Supplies in the Protectorate are obtained from streams, springs, wells or rain-water cisterns. The methods of sewage disposal are primitive in the Colony, as well as in the Protectorate. Limited sanitary controls over the production and the distribution of foodstuffs exist only in THE COLONY.